

**Before the**  
**FEDERAL COMMUNICATIONS COMMISSION**  
**Washington, DC**

In the Matter of	)	
	)	
Amendment of the Commission's Rules with	)	GN Docket No. 12-354
Regard to Commercial Operations in the	)	
3550-3650 MHz Band	)	
	)	
Petitions for Rulemaking Regarding the	)	RM-11788
Citizens Broadband Radio Service	)	RM-11789

**REPLY COMMENTS OF THE GENERAL ELECTRIC COMPANY**

August 8, 2017

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**REPLY COMMENTS OF THE GENERAL ELECTRIC COMPANY**

**I. INTRODUCTION AND EXECUTIVE SUMMARY**

The General Electric Company (“GE”) urges the Commission to reject the proposals of CTIA<sup>1</sup> and T-Mobile<sup>2</sup> to redefine Priority Access Licenses (“PALs”) in the 3.5 GHz Citizens Broadband Radio Service (“CBRS”) as Partial Economic Area (“PEAs”) licenses instead of census tract-based licenses. In submitting these comments, GE further calls the Commission’s attention to comments filed by Southern Linc as an example of the consequences we discuss *infra*.<sup>3</sup>

The petitioners characterize their proposals as a “handful of modifications,”<sup>4</sup> “common sense changes,”<sup>5</sup> or “targeted” tweaks.<sup>6</sup> But these are not small changes, and by asking the

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<sup>1</sup> CTIA, Petition for Rulemaking, GN Docket No. 12-354, RM-11788 (filed June 16, 2017) (“CTIA Petition”).

<sup>2</sup> T-Mobile, Petition for Rulemaking, GN Docket 12-354, RM-11789 (file June 19, 2017) (“T-Mobile Petition”).

<sup>3</sup> *See generally* Comments of Southern Linc, GN Docket No. 12-354, RM-11788, RM-11789 (filed July 24, 2017) (“Southern Linc Comments”).

<sup>4</sup> CTIA Petition at 2.

<sup>5</sup> *Id.* at 1.

<sup>6</sup> *Id.* at 1, 2, 3; T-Mobile Petition at 7.

Commission to replace census-tract licensing with PEAs, the petitioners are re-litigating a fundamental pillar of the CBRS rules after years of FCC proceedings that culminated in the *2015 CBRS Order*<sup>7</sup> and the *2016 CBRS Order on Reconsideration*.<sup>8</sup>

In this comment, GE speaks primarily to three high-level concerns that the company believes will be addressed by rejecting this petition:

1. GE is deeply concerned that these changes may have dangerous unintended consequences for the company's critical-infrastructure customers;
2. GE believes these changes would chill investment and innovation in the digital-industrial sector over the long-term; and
3. GE relies on a certain level of business certainty as the company makes investment decisions based on the fair availability of spectrum in the CBRS band, and these proposed changes, if adopted, will undermine that certainty.

The CBRS rules are settled and companies across a range of industries are already investing in this space. Wireless Internet service providers ("WISPs"), equipment manufacturers, tech companies, and heavy industries have raced to invest millions of dollars to unlock the potential of mid-band spectrum in the CBRS band. For example, GE is currently developing a suite of fixed point-to-point networks involving applications such as utility substation automation, positive traction control for trains, oil and gas pipeline monitoring, smart metering, wastewater management, heavy mining, and other forms of IoT and machine-to-machine ("M2M") telemetry. These use cases rely on the unique propagation characteristics of

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<sup>7</sup> *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015) ("*2015 CBRS Order*").

<sup>8</sup> *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Order on Reconsideration and Second Report and Order, 31 FCC Rcd 5011 (2016) ("*2016 CBRS Recon. Order*").

3.5 GHz spectrum, which travels further and withstands more interference than high-band millimeter wave spectrum, but has sufficient bandwidth available to support higher throughput compared to more limited low-band frequencies.

The Commission found that census-tract licensing is ideally suited to geographically targeted applications, such as those in oil refineries, coal mines, shipyards, and construction sites. Moving to PEA-based licensing would undermine reasonable, investment-backed expectations of GE and others while chilling their incentives to roll out next-generation deployments. These heavy-industry deployments would become economically impracticable under PEA-sized geographic area licensing because companies would be required to secure expensive geographic licenses that extend far beyond the areas targeted for service. General Authorized Access (“GAA”) is not a viable alternative to PALs in these use cases; GE’s critical infrastructure deployments require the certainty that accompanies licensed spectrum.

In short, the *public interest* is best served by retaining flexible and adaptable census-tract licenses because the Commission will continue to encourage industrial and commercial 5G deployment by large and small providers alike. There is no rational basis for the Commission to incentivize intermediaries to add unnecessary transaction costs to the use of CBRS spectrum or extract unnecessary economic rents as a cost of innovation.

## **II. GE RELIES ON HIGH-THROUGHPUT, LOW-LATENCY CONNECTIONS IN THE 3.5 GHZ BAND TO DEVELOP IOT, TELEMETRY, AND CRITICAL INFRASTRUCTURE APPLICATIONS.**

GE provides hardened, mission-critical technologies and communications networks for leading industrial and public utility companies that are tailored to meet customers’ objectives and unique geographic requirements. GE is among the leaders of the “Industrial IoT” (“IIoT”) revolution in the 3650-3700 MHz and 3.5 GHz portions of the CBRS band. GE has already

developed its own suite of technologies that support fixed point-to-point wireless connections in the 3650-3700 MHz frequencies, representing one of the over 2,000 terrestrial wireless Part 90 licensees in the band with more than 25,000 registered sites.<sup>9</sup> GE has also partnered with Qualcomm and Nokia to create a private LTE network using the 3.5 GHz portion of the band specifically for industrial applications.<sup>10</sup> Fundamentally altering the rules for the CBRS band would upset GE's investment-backed expectations for both its grandfathered operations and its new, diverse applications that will rely on the high-throughput, low-latency connections of 3.5 GHz spectrum.

GE has invested significant resources into developing a diverse range of Supervisory Control and Data Acquisition ("SCADA") products in the CBRS. SCADA systems have revolutionized critical infrastructure, adopting IoT technologies to control large-scale processes that include multiple sites, work over large distances, reduce infrastructure costs, and increase ease of maintenance and integration.<sup>11</sup> For example, GE's MDS Mercury Series is a highly secure, industrial-grade WiMAX communications platform that uses the 3650-3700 MHz band

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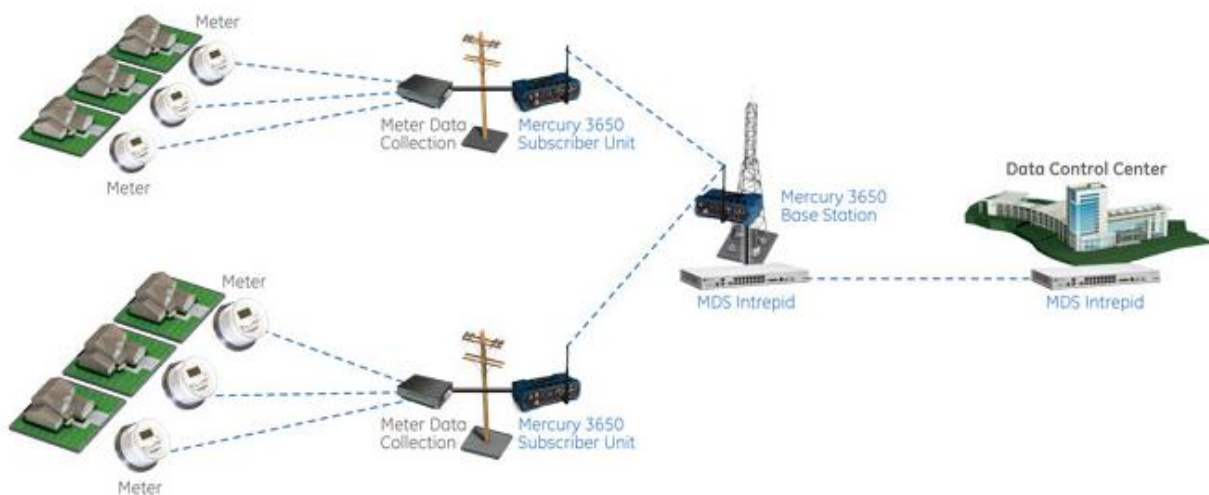
<sup>9</sup> See 2015 CBRS Order ¶¶ 394-399 (noting "many of these Part 90 incumbents have made substantial investments in equipment deploying various services in the band"). The Commission stated "we strive to minimize the adverse effects of [CBRS] rule changes on incumbents to the extent possible without compromising the public interest benefits that we believe such rules changes will produce" and adopted rules aimed at allowing 3650-3700 MHz users to continue operating under the new rules and interact with the SAS "without the need to retrofit or abandon their existing equipment." *Id.*

<sup>10</sup> Press Release, GE, Nokia and Qualcomm Unveil First Private LTE-based Trial Network Customized for Industrial IoT, Qualcomm (Feb. 22, 2017), <https://www.qualcomm.com/news/releases/2017/02/22/ge-nokia-and-qualcomm-unveil-first-private-lte-based-trial-network>.

<sup>11</sup> SCADA is a control system that uses computers, networked data communications, and graphical user interfaces for remote, high-level process management.

for mission-critical industrial applications.<sup>12</sup> The Mercury product line provides global licensed and unlicensed solutions designed to facilitate high throughput wireless networking of up to 30 Mbps using the 3650-3700 MHz band, and can easily be adapted to operate at 3.5 GHz. As a scalable solution to meet the growing bandwidth demands of various utilities, the MDS Mercury system allows GE's customers to build a communications infrastructure tailored to their specific business and geographic needs. The MDS Mercury 3650 was specifically designed to comply with stringent industrial specifications and to support a diverse range of applications including advanced metering infrastructure, oil and gas facilities, mining, and water and wastewater facilities.

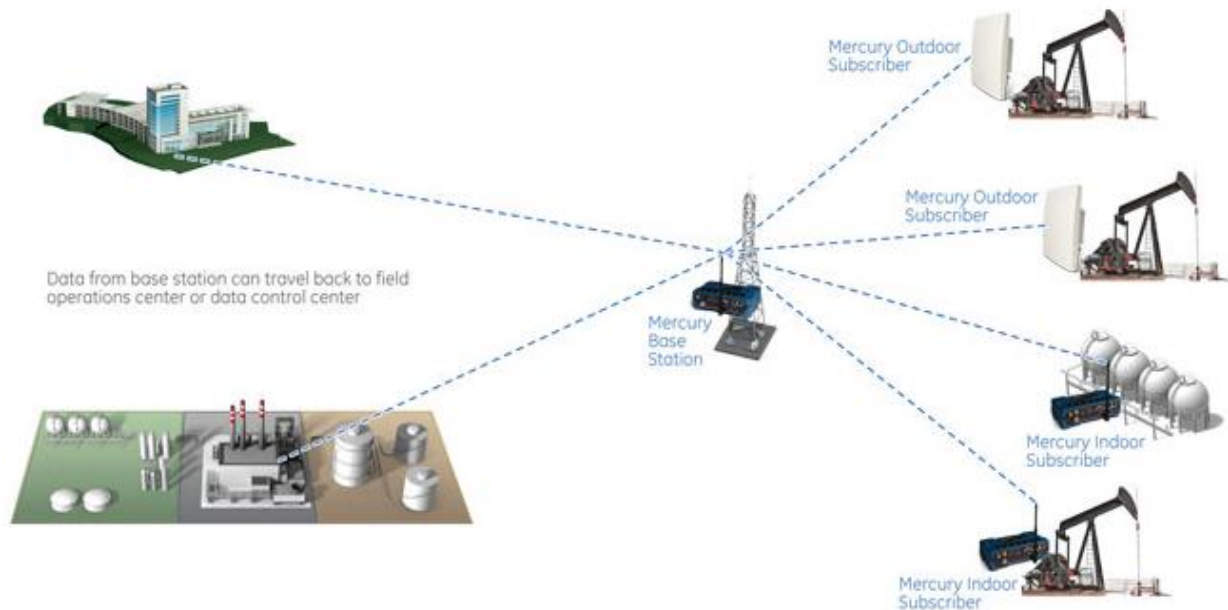
For example, the MDS Mercury product is used to support a Smart Grid Advanced Metering Infrastructure (AMI) private wireless network:



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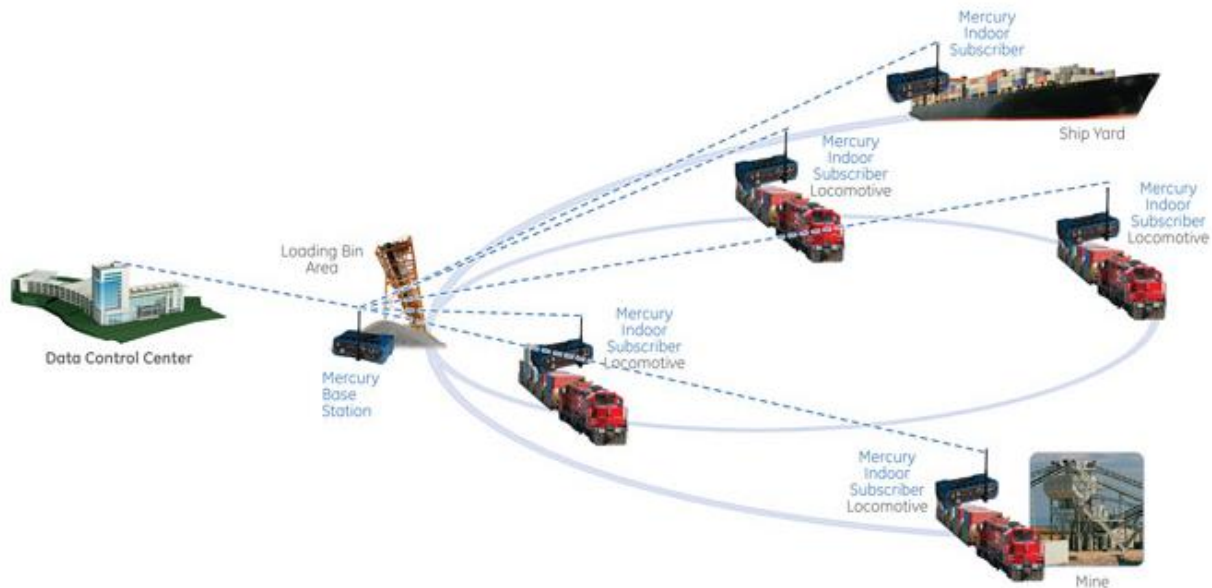
<sup>12</sup> *MDS Mercury 3650*, GE, <http://www.gegridsolutions.com/Communications/catalog/MercurySeries.htm> (last visited August 8, 2017).

MDS Mercury base stations also support point-to-multipoint solutions for SCADA and video traffic at oil well-head sites; these offerings connect indoor and outdoor subscribers and permit well-head video monitoring:

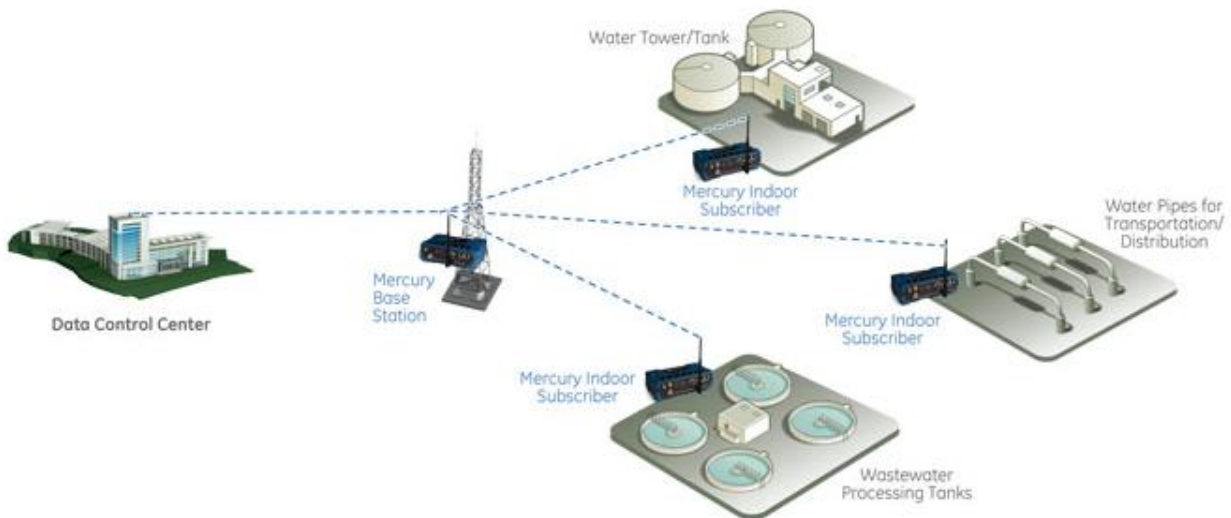


MDS Mercury stations are critical to ensuring high efficiency and seamless communication hand-offs between base stations and subscribers in mining operations that involve multiple rail yard loading and unloading processes. The Mercury station provides necessary bandwidth for video monitoring, and the WiFi option provides coverage for workforce automation:





The MDS Mercury also enables data aggregation from devices that monitor vital flow, pressure, and temperature assessments, and video surveillance in water and wastewater facilities:



GE's innovative service offerings are not speculative; they are available today. The wide variety of use cases not only demonstrate the utility of the current CBRS rules and the census-tract licensing on which those rules are based, but also showcase GE's sizeable capital investment in the CBRS spectrum to support IIoT, M2M connectivity, and other new applications.

### **III. THE COMMISSION SHOULD RETAIN THE FLEXIBILITY AND ADAPTABILITY OF THE RULES IT ALREADY ADOPTED FOR THE CBRS BAND.**

The current CBRS framework will allow GE and other users to continue developing services and networks that support the safe and efficient operation of critical infrastructure. Census-tract licensing in the 3.5 GHz band strikes the proper balance of supporting a variety of consumer-facing and industrial 5G applications.

#### **A. Smaller Geographic Area Licenses Provide the Flexibility Necessary to Support Fixed Wireless Services for Utilities and Other Critical Infrastructure Facilities.**

The Commission has twice rejected CTIA's<sup>13</sup> and T-Mobile's<sup>14</sup> proposals to expand the geographic scope of PALs beyond census tracts.<sup>15</sup> No changed circumstances justify disturbing that well-settled conclusion, and it would be arbitrary and capricious for the Commission to reverse itself at this juncture, years after it initiated the rulemaking,<sup>16</sup> carefully considered the evidence on the record, and affirmed its rules on reconsideration.<sup>17</sup>

To the contrary, the Commission struck the right balance. 5G is still in its infancy, and its applications are relatively undefined and evolving.<sup>18</sup> Certain use-cases may resemble

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<sup>13</sup> See, e.g., Petition for Reconsideration of CTIA, GN Docket No. 12-354 (filed July 24, 2015); Comments of CTIA-The Wireless Association, GN Docket No. 12-354, at 7 (filed July 14, 2014).

<sup>14</sup> See, e.g., Comments of T-Mobile USA, Inc., GN Docket No. 12-354, at 6-7 (filed Dec. 5, 2013); Response of T-Mobile USA, Inc., GN Docket No. 12-354 (filed Oct 19, 2015).

<sup>15</sup> See *2015 CBRS Order* ¶¶ 94-101; *2016 CBRS Recon. Order* ¶¶ 20, 50.

<sup>16</sup> See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Notice of Proposed Rulemaking, 27 FCC Rcd 15594 (2012).

<sup>17</sup> See generally *2016 CBRS Recon. Order*.

<sup>18</sup> See, e.g., 5G, 5G Americas, <http://www.5gamericas.org/en/resources/technology-education/5g/> (last visited Aug. 8, 2017) (explaining 5G “does not describe any particular specification” and “there is no clear definition of detailed requirements of 5G”); Chaim Gartenberg, *What is 5G*, The Verge (Feb. 24, 2017), <https://www.theverge.com/2017/2/24/14701430/5g-network-explained-mobile-data-cellular-millimeter-wave> (“[T]here is no official ‘5G’ yet. . . . A 5G

traditional 4G LTE consumer offerings, whereas others may extend the possibility of nascent IoT products like wearables and connected appliances. And there are industrial and critical infrastructure 5G deployments, like GE's, that will be highly specialized and limited to a narrow area.

GE is developing the very diversity of innovative services the Commission envisioned when it adopted flexible licensing rules for the CBRS band.<sup>19</sup> For example, GE partnered with Nokia and Qualcomm Technologies to create a private LTE network using the 3.5 GHz band to advance the digitization of industrial processes, which the companies will continue to test and demo throughout 2017.<sup>20</sup> The system will be part of the growing IIoT market and will consist of wireless technology and device chip sets, base station infrastructure and cloud service, and GE's open architecture operating system for the "Industrial Internet."<sup>21</sup> In addition, GE is working with Intel and Ericsson to create a Silicon Valley innovation center—"5GI"—for technology companies, industry leaders, and academia to develop pilot programs for the application of IIoT

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network will have specifications beyond those for 4G, but it hasn't even been agreed upon yet what those technical goalposts should even be.").

<sup>19</sup> *2015 CBRS Order* ¶ 6 ("Manufacturers, utilities, and other large industries can construct private wireless broadband networks to automate processes that require some measure of interference protection and yet are not appropriately outsourced to a commercial cellular network. Smart grid, rural broadband, small cell backhaul, and other point-to-multipoint networks can potentially access three times more bandwidth than was available under our previous 3650-3700 MHz band rules. All of these applications could share common wireless technologies, providing economies of scale and facilitating intensive use of the spectrum.").

<sup>20</sup> See Peter Marx, *GE Digital Sprints Towards 5G*, GE Blog (Feb. 28, 2017), <https://www.ge.com/digital/blog/ge-digital-sprints-towards-5g>; Press Release, GE, Nokia and Qualcomm Unveil First Private LTE-based Trial Network Customized for Industrial IoT, Qualcomm (Feb. 22, 2017), <https://www.qualcomm.com/news/releases/2017/02/22/ge-nokia-and-qualcomm-unveil-first-private-lte-based-trial-network>.

<sup>21</sup> Peter Marx, *GE Digital Sprints Towards 5G*, GE Blog (Feb. 28, 2017), <https://www.ge.com/digital/blog/ge-digital-sprints-towards-5g>.

5G technologies.<sup>22</sup> The pilots will be fully transparent, allowing other participants to join and build upon the efforts of 5G’s founders to expand innovation to new industries where 5G can enable societal improvements such as autonomous driving, smart and connected cities, health care, and media.<sup>23</sup>

Recognizing that spectrum in the 3.5 GHz band can support “[s]mart grid, rural broadband, small cell backhaul, and other point-to-multipoint networks”<sup>24</sup> like those being developed by GE and other companies, the Commission sought to create an “‘innovation band,’ where [the Commission] can explore new methods of spectrum sharing and promote a diverse array of network technologies, with a focus on relatively low-powered applications.”<sup>25</sup> The current rules reflect these objectives.

Census-tract PALs are based on sound technical considerations. The Commission properly concluded here and in the *Spectrum Frontiers* proceeding that narrowly tailored license sizes are more compatible with the propagation characteristics of mid- and high- band spectrum, which travel shorter distances and are subject to greater risks of interference than low-band spectrum.<sup>26</sup> Mid- and high- band spectrum is especially suitable for point-to-point industrial and

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<sup>22</sup> Press Release, Intel and Ericsson Launch 5G Innovators Initiative with Honeywell, GE and the University of California Berkeley, Intel (Feb. 21, 2017), <https://newsroom.intel.com/news-releases/intel-ericsson-launch-5g-innovators-initiative-honeywell-ge-university-california-berkeley/>.

<sup>23</sup> *Id.*

<sup>24</sup> 2015 CBRS Order ¶ 6.

<sup>25</sup> *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Further Notice of Proposed Rulemaking, 29 FCC Rcd 4273 (2014) (“2014 CBRS FNPRM”); *see also* 2015 CBRS Order ¶ 2.

<sup>26</sup> *See, e.g.,* 2015 CBRS Order ¶¶ 100-101 (“The larger, traditional license areas favored by some commenters are inconsistent with our desire to promote innovative, low power uses in this band, such as small cells, which align well with small, targeted geographic areas such as census tracts.”); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, 65 Comm. Reg. ¶¶ 119-121 (2016) (“*Spectrum Frontiers Report and Order*” or “*Spectrum Frontiers FNPRM*”)

rural applications that require low-latency and throughput-intensive connections. Because these deployments are likely to occur in defined physical settings (e.g., power plants), licensees need “additional flexibility to target their deployments where they need capacity.”<sup>27</sup>

Census tracts also make economic sense. The Commission has repeatedly acknowledged the harms of spectrum warehousing.<sup>28</sup> The risk of waste would be particularly acute where, as here, 5G providers would be forced to acquire PEA-based licenses just to deploy the spectrum in a targeted area.<sup>29</sup> By permitting efficient and targeted deployments, “smaller license areas reduce the potential for warehousing spectrum.”<sup>30</sup>

5G deployments, of course, could occur over larger swaths of territory. But whereas PEA-based licenses may foreclose targeted deployments, smaller geographic licenses “could equally facilitate access by both small carriers and large carriers.”<sup>31</sup> Because census tracts “nest” into PEAs, mobile broadband operators may feasibly assemble a contiguous footprint of census-tract licenses to achieve economies of scale and deploy over wide areas.<sup>32</sup>

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(proposing counties as the base geographic area because high-band spectrum does not propagate well over long distances and small license areas provide licensees flexibility to target their deployments where they need capacity, among other benefits).

<sup>27</sup> See 2015 CBRS Order ¶ 6; *Spectrum Frontiers Report and Order* ¶ 119.

<sup>28</sup> See, e.g., 2015 CBRS Order ¶ 73 (rejecting proposals that “could encourage spectrum warehousing and disincentivize efficient use of the band”); *Spectrum Frontiers Report and Order* ¶ 119.

<sup>29</sup> See, e.g., Southern Linc Comments at 7 (“Under the petitioners’ approach, an entity seeking to operate in a limited geographic area such as a single county or across a few census tracts would be compelled to submit the highest bid for the entire PEA, thus foreclosing the PAL as an economically viable option.”).

<sup>30</sup> See *Spectrum Frontiers Report and Order* ¶ 119; see also 2015 CBRS Order ¶¶ 73, 138.

<sup>31</sup> See *Spectrum Frontiers Report and Order* ¶¶ 27, 119; see also 2015 CBRS Order ¶ 100 (noting there are “opportunities for participation with much lower capital investment requirements associated with smaller service areas”).

<sup>32</sup> See *Spectrum Frontiers Report and Order* ¶¶ 27, 82, 99.

Whereas census tracts present manageable challenges, the burdens of PEAs present insurmountable obstacles for providers that intend targeted deployments. The petitioners argue that PEAs would support “micro-targeted service in smaller areas” by way of spectrum leases,<sup>33</sup> but the Commission has already rejected that argument.<sup>34</sup> Next, they propose permitting PAL disaggregation to facilitate targeted deployments.<sup>35</sup> But the transaction costs of acquiring disaggregated PEAs would be greater than those of accumulating larger, contiguous licensing areas.<sup>36</sup> Because smaller license sizes incent 5G providers to bid on spectrum they actually need, those providers will pay less for census-tract licenses in an initial auction than they would if forced to purchase a disaggregated PEA on the secondary market. A targeted provider seeking to acquire disaggregated PALs exclusively on the secondary market is likely to be held hostage by hold-out sellers and speculators.

**B. Moving to PEAs Would Force GE and Other Providers Off PALs and Deprive Them of the Licensed Spectrum Necessary to Support Mission-Critical Applications.**

Throughout this proceeding, petitioners and other wireless carriers have introduced proposals that would reserve PALs for “traditional licensees,”<sup>37</sup> foreclosing GE and other users from this spectrum.<sup>38</sup> The Commission considered and rejected these proposals, recognizing the

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<sup>33</sup> CTIA Petition at 10.

<sup>34</sup> *See 2015 CBRS Order* ¶ 100.

<sup>35</sup> CTIA Petition at 10.

<sup>36</sup> *2015 CBRS Order* ¶ 100.

<sup>37</sup> *Id.* ¶ 58.

<sup>38</sup> *See, e.g.,* Comments of Ericsson in Response to the Further Notice of Proposed Rulemaking, GN Docket No. 12-354, at 4-6 (filed July 14, 2014) (“strongly urg[ing]” the Commission to adopt a “more traditional model”); Comments of CTIA-The Wireless Association, GN Docket No. 12-354, at 3-5 (filed July 14, 2014); Comments of Qualcomm Inc., GN Docket No. 12-354, at 6 (filed July 14, 2014); Verizon Comments on Further Notice of Proposed Rulemaking, GN Docket No. 12-354, at 11-15 (filed July 14, 2014).

need to promote investment in “a new generation” of PAL licensees in the future.<sup>39</sup> Indeed, the Commission chose to provide potential PAL bidders “simultaneous economic choices of bidding for higher priority PAL licenses in areas where such priority is critical to their needs and relying on shared GAA use where it is not.”<sup>40</sup> For users like GE, the ability to access PAL licenses in census tracts where customer facilities are located is critical.

Targeted deployments cannot rely on GAA alone despite petitioners’ claims to the contrary.<sup>41</sup> GAA, which provides users no protection from interference, is an inadequate alternative to PALs. GE’s applications require interference protection and the ability to offer quality of service guarantees to their customers. GE’s industrial solutions support networks that provide mission-critical functions to ensure the safe and reliable operation of industrial and utility facilities. A PAL framework provides the type of “quality assured” spectrum with the degree of interference protection necessary for these important operations.<sup>42</sup> GAA alone is insufficient to support GE’s services.

Proposals by CTIA and T-Mobile to assign PALs on a PEA basis instead of a census-tract basis would also contravene the Commission’s goals for the CBRS band to serve “market needs not adequately served by [the FCC’s] conventional licensed or unlicensed rules.”<sup>43</sup> The Commission recognized that “regulatory adaptability should make the 3.5 GHz band hospitable

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<sup>39</sup> See *2015 CBRS Order* ¶ 58.

<sup>40</sup> *Id.*

<sup>41</sup> See, e.g., T-Mobile Petition at 9-10 (“Designating the entire band for PAL use will not diminish the opportunities for GAA use. Consistent with the current rules, GAA users will still be able to access all 150 megahertz when it is not in use by PAL licensees and will have access to any part of the 3.5 GHz spectrum that is not held by PAL licensees. In fact, designating additional spectrum for PALs will *broaden* the CBRS experiment, allowing for greater testing of an environment with both PAL and GAA operations.”).

<sup>42</sup> *2015 CBRS Order* ¶ 89.

<sup>43</sup> *Id.* ¶ 6.

to a wide variety of users, deployment models, and business cases.”<sup>44</sup> Specifically, the Commission envisioned that industrial and utility users could take advantage of the framework for networks that “require some measure of interference protection and yet are not appropriately outsourced to a cellular network.”<sup>45</sup> Making PALs available on a PEA basis would place such licenses out of reach for GE.

Further, end-user applications of IIoT technologies are so intertwined with connectivity that rule changes to the CBRS band would require an entire system overhaul for industrial customers. Networks such as those provided by GE and other companies in the IIoT market are not modular. GE’s services are deeply embedded into its customers’ operational systems and integrated into their employees’ training. Should the Commission adopt rules that hinder the ability of GE to continue offering its industrial wireless solutions in the CBRS band, its customers would be required to implement significant changes to systems and employee protocols, incur substantial costs, and would likely be forced to slow or halt operations during the transition. The benefits alleged by CTIA and T-Mobile in support of their proposals do not outweigh the significant costs adopting changes to the CBRS rules would impose on users such as GE and its customers.

### **C. Wireless Companies Are Investing Heavily to Develop Next-Generation Solutions in the CBRS.**

Mobile wireless companies are following the leadership of IIoT developers and are investing in 3.5 GHz solutions, belying petitioners’ claims that the current rules will chill innovation. Earlier this year, T-Mobile, Sprint, and Samsung joined the CBRS Alliance, which

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<sup>44</sup> 2015 CBRS Order ¶ 6.

<sup>45</sup> *Id.*



already included AT&T, Verizon, Brocade and others.<sup>46</sup> Members are rolling out pilot programs for the spectrum access system (“SAS”) and new small cell products intended for the CBRS band.<sup>47</sup> For instance, Federated Wireless and Alphabet Inc. demonstrated the interoperability of their 3.5 GHz SASs in 2016, and Federated Wireless has conducted 40 trials on its SAS product to date.<sup>48</sup>

Fixed wireless, broadband, and equipment providers, too, are investing and experimenting in the CBRS band. For example, Rise Broadband, the largest fixed wireless provider in the United States, was granted an STA to conduct trials of its 100 Mbps service in the 3.5 GHz band.<sup>49</sup> Today, Rise is using base stations in the 3650-3700 MHz spectrum, which can be switched to the 3.5 GHz band with a simple change of CPE at the customer’s home or business. Rise aims to offer affordable fiber-type Internet services in the CBRS band, delivering speeds of up to 100 Mbps to customers in rural and less populated areas.<sup>50</sup>

Wireless carriers will have more opportunities to acquire mid-band spectrum for 5G applications in the future. For example, the Commission’s proceeding to examine the frequencies between 3.7-4.2 GHz aims to open more bands for expanded flexible use,

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<sup>46</sup> See Sue Meek, *Why the 3.5 GHz CBRS Band Could be a Breakthrough for 5G*, SDX Central (Mar. 10, 2017), <https://www.sdxcentral.com/articles/news/3-5-ghz-cbrs-band-breakthrough-5g/2017/03/>.

<sup>47</sup> *Id.*

<sup>48</sup> See Monica Allevan, *Federated Wireless Racks Up 40 Trials for 3.5 GHz CBRS Spectrum Sharing System*, FierceWireless (June 19, 2017), <http://www.fiercewireless.com/wireless/federated-wireless-racks-up-40-trials-for-3-5-ghz-cbrs-spectrum-sharing-system>.

<sup>49</sup> See Monica Allevan, *Google, Boingo, Microsoft and More Urge Quick FCC Action on 3.5 GHz CBRS Band*, FierceWireless (June 1, 2017), <http://www.fiercewireless.com/wireless/google-boingo-microsoft-and-more-urge-quick-fcc-action-3-5-ghz-cbrs-band>.

<sup>50</sup> *Id.*

particularly for wireless broadband applications.<sup>51</sup> Contrary to claims by petitioners, the Commission need not foreclose the 3.5 GHz band from users like GE for the benefit of wireless carriers.

#### **IV. CONCLUSION.**

The petitions start from an incorrect premise—namely, that next-generation networks will be limited to wide-area, mass-market networks. Nothing could be further from the truth. GE and other industrial providers have invested significant resources in building the IIoT and 5G technologies that will automate industrial processes, create operational efficiencies, and increase facility safety. The Commission properly found that the multiplicity of 5G use cases and diversity of providers requires experimentation and a more tailored approach. The petitions have provided no new evidence for the Commission to revisit its previous two determinations, and no such evidence exists. For the reasons stated above, GE respectfully asks the Commission to reject the proposals of CTIA and T-Mobile and affirm the CBRS band rules as they stand today.

Respectfully submitted,

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<sup>51</sup> See *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 GHz and 24 GHz*, Notice of Inquiry, GN Docket No. 17-183 (July 13, 2017).

## **CERTIFICATE OF SERVICE**

I, Michael Fitzpatrick, hereby certify that on this 8<sup>th</sup> day of August, 2017, a copy of the foregoing Reply Comments of the General Electric Company was sent by first class, postage prepaid mail to the following:

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